

THE RELATIONSHIP BETWEEN VOCABULARY KNOWLEDGE AND READING COMPREHENSION ABILITY OF SENIOR HIGH SCHOOL STUDENTS

Helga M. Djuarsa¹

helgamarianaj@gmail.com

Abstract

Reading plays an important role in learning a language because it needs students to know and understand what they are reading. This paper is to investigate if there is a strong correlation between vocabulary size and the students' ability to comprehend reading passages by senior high school students in a private school in Surabaya. Knowing the amount of words, the students have will help teacher to predict their ability in understanding reading passages in the foreign language. The instrument used in this study is Nation's Vocabulary Level Test (level 3000) and the participants were senior high school students in a private school in Surabaya.

Keywords: *vocabulary, vocabulary knowledge, reading comprehension*

Introduction

English plays an important role in our lives. There are four skills which are needed to be mastered in order to be able to acquire it. Among those four skills reading may be considered as the most difficult one by the students to be mastered because many of today's students are poor readers (Bean, 1996). In order to comprehend English test, students must have sufficient vocabulary size as it is stated by Nation (2001) vocabulary knowledge is one of the best predictors of learners' ability in reading comprehension. Reading comprehension is a complex skill which involves, thinking, teaching, past experience and knowledge (Prado & Plourde, 2005) in Harvey (2014). It means when students read a text for the first time, they are only reading words then when his ability is getting better, he moves into learning the actual meaning of words they are reading. In this case what is being read by students is actually the key to comprehension.

What is the purpose of reading? Nuttall (2005) states that the reasons for reading is not because we are interested in the pronunciation and grammatical structures which are used in the text but we probably want to get the message that the writer intended. In order to be able to get

¹ Helga M. Djuarsa *adalah* Widya Mandala Catholic University Surabaya

the message delivered by the writer, students must have schemata or background knowledge (Nuttall, 2005) and enough vocabulary size (Laufer, 1997 in Nilforoushan, 2012). Nuttal (2005, p. 7) states “Schema is a mental structure. It is abstract because it does not relate to any particular experiences, although it derives from all the particular experiences we have had.

Lack of vocabulary might lead students to difficulty in understanding reading passages because vocabulary plays an important role in order to comprehend reading texts. Vocabulary is the most important part in language learning and language use (Laufer, 1997) in Nilforoushan (2012). It is a central aspect of language learning in general, and reading comprehension in particular. Moreover, vocabulary is the strongest component of proper reading comprehension and studies have shown that students who have a large working vocabulary receive better grades than students who do not (Stahl & Fairbanks, 1986) in Harvey.

What might make the students read poorly? Reading may be difficult for students because, first, they do not have sufficient vocabulary. Laufer (1997) in Nilforoushan (2012) stated that vocabulary is the most important part in language learning and language use. Thus, we may say that vocabulary is a central aspect of language learning in general and reading comprehension in particular. The second is students do not practice extensive reading. Extensive reading involves learners reading texts for enjoyment and to develop general reading skills. Read (2000) in Olmos (2009) stated that learners more likely know about words if the words frequently occur but when the words occur less frequently then the students will also know less about the words.

Jitendra and Gajra (2011) cited in Harvey stated that poor reading comprehension may also be related to a lack of prior experiences or a lower socio-economic environment. Realizing the importance between reading skill and vocabulary size owned by the students, the writer wants to find out whether vocabulary size gives strong influence on students’ ability on reading achievement.

The research question of the study is: “What is the correlation between the breadth and the depth of vocabulary and grade ten students’ reading achievement?” In line with this research questions, the objective of this study is to determine what the correlation is between the breadth and the depth of vocabulary and the grade ten students’ reading achievement.

Practically, this study is expected to give more insight for diagnostic purposes. Teachers can diagnose their students’ weaknesses and strengths in English in terms of vocabulary. This study will also be useful for teachers to assess and measure the learners’ vocabulary size. Finally, it will help teachers to find the right strategy to teach vocabulary and to select materials which are suitable for their level. Theoretically, the findings are

expected to be useful information for other observers who are interested in analyzing the correlation between vocabulary size and reading ability and also the importance and the role of vocabulary in reading.

Review of Literature

The Linguistic Schemata

According to Barlett (1932) a schema (plural, schemata) refers to mental framework based on past experience developed as a means of accommodating new facts, and hence making sense of them.

According to **schema theory**, people make sense of new experiences and the world by activating the mental representations or **schemata** stored in their memory. New experiences and information are interpreted according to how it fits into their schemata. Information that does not fit may be misunderstood or miscomprehended.

Carrel and Eisterhold, (1983) in An (2013) states there are four types of schemata. The first is a formal schema. Formal schema refers to background knowledge of the formal, rhetorical organizational structures of different types of texts. The second is content schema which refers to background knowledge of the content area of the text. The third is culture schema. Richard et al. (2000) in An (2013) define culture as the total set of beliefs, attitudes, customs, behavior, social habits, etc., of the members of a particular society. The fourth is Linguistic schema refers to the knowledge about vocabulary and grammar. It plays a basic role in a comprehensive understanding of the text.

The Breadth and the Depth of Vocabulary

As cited in Qian and Schedl (2004:30), based on collective strength of previous frameworks of vocabulary knowledge (Qian, 1999; Henriksen, 1999; Nation, 2001), Qian's (2002) recent conceptual framework was developed. It offers four connected dimensions of vocabulary knowledge: vocabulary size which refers to the number of words of which a learner has at least some superficial knowledge of meaning; depth of vocabulary knowledge, which includes all lexical characteristics ,such as phonemic, graphemic, morphemic, syntactic, semantic, collocational, and phraseological properties, as well as frequency and register; lexical organization which refers to the storage, connection, and representation of words in the mental lexicon of a learner; automaticity of receptive-productive knowledge which refers to all the fundamental processes through which access to word knowledge is achieved for both receptive and productive purposes, including phonological and orthographic encoding and decoding, to structural and

semantic features from the mental lexicon, lexical-semantic integration and representation, and parsing and composing.

Vocabulary Knowledge

Vocabulary knowledge (or lexical competence) can be simply defined as ‘knowing a word’. According to Richard (1976) cited in Linuwih (2012) there are eight assumptions to cover the various aspects of knowing a word. Knowing a word means a native speaker continues to expand his vocabulary in adulthood, whereas there is comparatively little development of syntax in adult life, to know the degree of probability of encountering that word in speech or print, know the limitations imposed on the use of the word according to the variations of functions and situations, know the syntactic behavior associated with that word, know a word entails knowledge of the underlying form of word and the derivatives that can be made from it, know a word entails knowledge of the network of associations between that word and the other words in language and to know the semantic value of the word, and know many of the different meanings associated with the word.

Vocabulary Size

Vocabulary size is often called the breadth of vocabulary knowledge which Anderson and Freebody (1981) cited in Linuwih (2012) define vocabulary knowledge as the number of words for which the person knows at least some of the significant aspects of meaning.

Reading Comprehension

Comprehension involves recalling information from text, extracting themes, engaging in higher order thinking skills, constructing a mental picture of text, and understanding text structure (van den Broek & Kremer, 2000) cited in Ness (2011). It means that comprehension is a complex process. The importance of constructing meaning from text has led researchers to conclude that “the most important thing about reading is comprehension” (Block, Gambrell, & Pressley, 2002, p. 3 cited in Ness, 2011) and that comprehension is the ultimate goal of proficient literacy (Pressley, 2006) cited in Ness (2011). Whereas reading comprehension is a complex skill which involves, thinking, teaching, past experience and knowledge (Prado and Plourde, 2005) cited in Harvey (2014).

The Bottom-up Approach

“In the *bottom-up processing*, the reader builds up the meaning from the black marks on the page: recognizing letters and words, working

out sentence structure” (Nuttall, 2005, p. 17). Furthermore Nuttall (2005, p. 17) also points out that bottom-up processing can be used as a corrective to “tunnel vision” (seeing things only from our own limited point of view).

The Top-Down Models

In the *top-down processing*, we use our own intelligence and experience (Nuttall, 2005). This processing is different from bottom-up processing as it sees the reading texts as the overall purpose of the text, or get a rough idea of the pattern of the writer’s argument (Nuttall, 2005, p. 16).

Interactive Reading Processing

It is an approach where the readers shift from one focus to another (Nuttall, 2005). First, they use top-down approach to predict the probable meaning then move to bottom-up approach to check whether that is really what the writer says.

Taxonomy of Reading Comprehension

The Barrett Taxonomy (Clymer, 1968), designed originally to assist classroom teachers in developing comprehension questions and / or test questions for reading, is especially useful for classroom questioning in other content areas as well. The Barrett Taxonomy of Reading Comprehension is classified based on its level of complexity.

Clymer (1968) gives the details as follows: the first is Literal (recognition or recall). Literal comprehension demands students to identify or locate ideas and information which are explicitly stated in the reading passage. The second is reorganization. In this level students are required to analyze, synthesize, and/ or organize ideas or information explicitly stated in the selection. The readers may utilize the statements, paraphrase or translate the author’s statements. The third is inferential comprehension. In this level students are asked to combine ideas stated in the text with the information they have before based on their prior knowledge, intuition or experiences. The fourth is evaluation. In this level students are demanded to make an evaluative judgment by comparing ideas presented in the reading passages with external criteria provided by the teacher, other authorities, or other written sources, or with internal criteria provided by the reader’s experiences, knowledge, or values. The fifth is appreciation which deals with the psychological and aesthetic impact of the selection on the reader. Appreciation demands the student to be emotionally and aesthetically sensitive to the work so that students have a reaction to the worth of its psychological and artistic elements.

Appreciation includes both knowledge and emotional response to literary techniques, forms, styles, and structures.

Vocabulary Size and Reading Achievement

Vocabulary knowledge has been recognized to have a crucial role in reading achievement both in first language (L1) situation and second language (L2) situation. In Indonesia where English is designated as a foreign language in the curriculum, this study is undertaken to explore the role of vocabulary size in reading achievement.

The persistent finding in reading research is that the extent of students' vocabulary knowledge relates strongly to their reading comprehension (Ditha, 2009). It means that if students can comprehend reading passages well, they will also have high achievement in reading as they know what they are reading.

Laufer (1997) as cited in Astan (2014) indicates that both native speakers and second language learners will be able to achieve comprehension only if they understand the vocabulary in the reading text.

Some Research on Reading and Vocabulary size

Some studies show that there is actually a strong relationship between vocabulary size and reading comprehension. A study conducted by Anderson, and Freebody (1979). The purpose of the study is to know about the role of vocabulary knowledge in reading comprehension. The methods used in this study are Yes/No format, Multiple Choice, Constructed answer and Matching. The result shows that word knowledge is important for reading comprehension. The other study conducted by Olmos (2009) to high school students in Murcia also shows that vocabulary plays an important role in order to comprehend reading passages. The purpose of the study is to determine the vocabulary size of a group of final year students in a High School in Murcia. This study also used Nation Vocabulary Level Test as the instrument whereas the focus of this study is whether the vocabulary size of a group of final year students in a High School in Murcia gives strong influence on their ability to comprehend passages. The result shows that a small vocabulary size will also limit students' other languages capacities

Research Method

The study was a correlation study. The population and sample used were a class that cannot be reorganized in order to implement this study. The writer used two classes consisting of sixty students. They were directly administered a vocabulary test namely Nation's vocabulary level test and reading tests. In this case the writer used Nation Vocabulary Test Level 3000.

The reading texts used was a reading text which derived from an English book published by **Departemen Pendidikan dan Kebudayaan Indonesia**).

This study is aiming to investigate the relationship between the vocabulary size and reading comprehension achievement of senior high school students.

Data Collection Procedure

In this study, two types of data were collected: the students' score on vocabulary test level 3000 and the students' score on reading comprehension. The Vocabulary test is developed by Nation (1990).

Data Analysis Technique

The data analysis techniques used is correlation coefficient. Coefficient of correlation is a measurement of a relationship between two variables. It is usually designated by the letter r or the Greek letter ρ . Coefficient values range from -1.00 to + 1.00. Therefore this study will use **Pearson's Product Moment Correlation** as it is a coefficient appropriate for use with interval and ratio data. A table of critical values for Pearson r revealed with a 5% possibility of being error, a correlation equal to or greater than an absolute value of .532 is considered to be real and not a product of chance.

Results of Data Analysis and Findings **Vocabulary Level Test Mastery** **Table 6.1 Vocabulary level Test Mastery** **Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
Vocabulary Score Test 1	60	.0	84.0	34.673	22.2105
Vocabulary Score Test 2	60	.0	61.6	23.153	17.2370
Vocabulary Score Test 3	60	.0	78.4	30.590	20.8767

In the first Vocabulary Test, the maximum score gained by the students is 84 and the minimum score is 0. The mean of the score therefore is 34.673 and the standard deviation is 22.2105. In this first test there were 60 students involved. In the second Vocabulary Test, the maximum score gained by the students is 61.6 and the minimum score is

0. The mean of the score therefore is 23.153 and the standard deviation is 22.2105. In this second test there were 60 students involved. In the third Vocabulary Test, the maximum score gained by the students is 78.4 and the minimum score is 0. The mean of the score therefore is 30.590 and the standard deviation is 22.2105. In this first test there were 60 students involved.

Reading Test Mastery
Table 6.2 reading Test Score
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Reading Test Score Rater 1	60	10.0	90.0	56.300	18.7221
Reading Test Score Rater 2	60	15.0	90.0	56.917	19.1137

In the first Reading Test, the maximum score gained by the students is 90 and the minimum score is 10.0. The mean of the score therefore is 56.300 and the standard deviation is 18.7221. In this first test there were 60 students involved. In the second Reading Test, the maximum score gained by the students is 90 and the minimum score is 15.0. The mean of the score therefore is 56.971 and the standard deviation is 19.1137. In this first test there were 60 students involved.

The Relationship between Vocabulary size and Reading comprehension Achievement

The first vocabulary size test coefficient was 0.943, the second one is 0.833 and the third one is 0.944 which means that the variables measured give strong relationship.

Table 4.3 The summary of Pearson Correlation

Variables	Coefficient (r) of Pearson Correlation	Significance
Vocabulary Test 1	0.943	Significant
Vocabulary Test 2	0.833	Significant
Vocabulary Test 3	0.944	Significant

Vocabulary size has a positive and strong correlation with the students' reading comprehension ability. It can be verified through the value of probability (sig) is 0.000 which is smaller than the significance value 0.05. It means that *Ha* is accepted as the sig. value is smaller than 0.05.

In other words vocabulary give positive and strong correlation to reading comprehension ability meaning that when the students' vocabulary size increases it might also increase the students' ability in reading comprehension.

In order to confirm the result of correlation using Pearson Product Moment, linear regression analysis was implemented. The use is to check the relationship between the vocabulary and students' reading comprehension ability when they were computed together.

Table 4.5 Linear Regression Analysis Result

Variable	Standardized Coefficients Beta	Sig.	Significance
Vocabulary	0.469	.000	mark

The result of linear regression analysis confirmed the result of Pearson Correlation by showing that vocabulary has a mark and positive correlation to students' reading comprehension ability. The coefficient found was 0.469

Conclusion and Suggestions

Derived from the findings and data analysis it can be concluded that there is a high correlation between the students' vocabulary size and their reading comprehension achievement. The present study found a high correlation between the students' vocabulary size and their reading comprehension achievement which can be seen from the value of probability (sig) is 0.000 which is smaller than the significance value 0.05.

Moreover, from the three vocabulary tests conducted, all of them showed high/significant correlation. The first coefficient of the vocabulary test is 0.943, the second coefficient of the vocabulary test is 0.833, and the third coefficient of the vocabulary test is 0.944.

Pedagogical Implications

It was found that vocabulary size owned by students gave high contribution to the students' reading comprehension ability. This may imply that when it comes to teaching, teachers should pay more attention to the students' vocabulary.

In order to know the students' vocabulary size, teachers should diagnose it first then they should also test the students' ability in reading comprehension. Both are important as each student may have different level and proficiencies and developmental rates.

The present study was not intentionally dedicated to investigate the efficiency of teaching particular vocabulary in reading lessons; therefore, it still needs further investigations. It is still unknown if the change of vocabulary size mastery will affect its contribution to other language skills.

Suggestions

There are several areas that need to be investigated regarding the learners' background and its effect on their vocabulary size such as the information about home language, and experience in English speaking countries are reviewed in relation with their vocabulary size. In addition, individual factors that dominantly affect their vocabulary size also need to be examined.

Furthermore, in order to increase the students' vocabulary size, teachers must be able to select the most appropriate strategies in teaching vocabulary. Some of the strategies which can be used are introducing a word and determine a definition or description, drawing picture of the word or what the word represents, having extensive reading, using dictionary, etc.

Reading comprehension ability is not only determined by vocabulary but other aspects. Several experimental studies are still needed to determine the other aspects that have significant contribution to reading comprehension ability.

References

- Adegbite, W. (2000). Teaching Reading Comprehension in English Through Demonstration of Some Strategies. *TESL Reporter*, 33(1), 23-31.
- An, S. (2013). Schema Theory in Reading. *Academy Publisher*, 3(1), 130-134. Retrieved from www.academypublication.com/issues/past/tpls/vol03/01/19.pdf
- Anderson, R.C & Freebody, P. (1979). Vocabulary Knowledge Bolt, Beranek and Newman Inc, Illinois.
- Astan, C. (2014). The Correlation between Vocabulary Size and the Three Levels of Reading Comprehension. Retrieved from repository.wima.ac.id/view/year/2014.html

- Bahasa Inggris. In K.P. Indonesia (2014). *Bahasa Inggris*. Jakarta: Pusat Kurikulum dan Perbukuan, Balitbang, Kemendikbud.
- Cho, H. (June 2014). *What Readers in Language Teaching*. London and Basingstok: Macmillan: Oxford University Press. Writing Tasks do TESOL Professors Require. *TESOL Journal* , 5(2), 247-264.
- Fraenkel, J. R., & Wallen, N. E. (2007). *How to Design and Evaluate Research in Education*. New York: McGraw-Hill.
- Gene, P. Quellette (2006). What's Meaning Got to Do with It: The Role of Vocabulary in Word Reading and Reading Comprehension, *Journal of Educational Psychology*, 4(98), 554-566. DOI: 10.1037/0022-0663.98.3.554 Retrieved from psycnet.apa.org/psycinfo/2006-09687-006
- Ghozali. 2005, Analisis *Multivariate dan Program SPSS*. Semarang: Badan Penerbit Universitas Diponegoro.
- Hair, J.F, Anderson, R.E., Tatham, R.L, & Black, W.C, 1995. *Multivariate Data Analysis*, Fourth ed., New Jersey: Prentice Hall.
- Hatami, S & Tavakoli (2012). The Role of Depth versus Breadth of Vocabulary Knowledge in Success and Ease in L2 Lexical Inferencing. *TESL Canada Journal/Revue TESL DV Canada*, 30(1), 1-21. Retrieved from www.teslcanadajournal.ca/index.php/tesl/article/viewFile/1123/942
- Harvey, M. (n.d.).(2014) Reading Comprehension: Strategies for Elementary and Secondary School Students. Retrieved from [ws.lynchburg.edu/~MHarvey/644%5B1%5D%20correct \(1\).pdf](http://ws.lynchburg.edu/~MHarvey/644%5B1%5D%20correct%20(1).pdf)
- Hedge, T. (1985). *Using Readers in Language Teaching*. Maximillan: Oxford University Press.
- Horwitz,E. K “The Beliefs about language learning of beginning university foreign language students,” *The Modern Language Journal* , 72(3), 283-294, 1988. View at Publisher.
- Iway, Y. (2011). The Effect Metacognitive Reading Strategies: Pedagogical Implications for EFL/ESL teachers. *The Reading Matrix*, 11(2), 150-157. Retrieved from www.readingmatrix.com/articles/april_2011/iway.pdf.
- Kendra R. Tannebaum, J.K. (2006). Relationship between World Knowledge. *Scientific Studies of Reading*, 10(4), 381-398. Retrieved from

- Linuwih, E. (2012). Vocabulary Size and L2 Academic Writing Quality of the Graduate Students of Widya Mandala Catholic University: A Correlative Study. Retrieved from repository.wima.ac.id/view/subjects/P.html
- Ma, Y.-h. &.-Y. (2015). A study on the Relationship between English Reading Comprehension and English Vocabulary Knowledge. *Educational Research International* , 2015,1-14, Retrieved from <http://dx.doi.org/10.1155/2015/209154>.
- Moore, C. &. (2008). Reading Comprehension Strategy. Rainbow dots. *The Journal of the International Association of Special Education*, 9(1), 124-127.
- Nation, I.S.P. (2001). *Learning Vocabulary in Another Language*. Cambridge, UK: Cambridge University Press. Retrieved from catdir.loc.gov/catdir/samples/cam031/2001269892.pdf
- Ness, M. (2011). Explicit Reading Comprehension Instruction in Elementary Classrooms: Teacher Use of Reading Comprehension Strategies. *Journal of Research in Childhood Education* , 25(1), 98-117.
- Nilforoushan, S. (2012). The Effect of Teaching Vocabulary through Semantic Mapping on EFL Learners' of the Affective Dimensions of Deep Vocabulary Knowledge. *Canadian Center of Science and Education* , 5(10), 164-172. doi:10.5539/elt.v5n10p164. Retrieved from <http://dx.doi.org/10.5539/elt.v5n10p164>.
- Nuttal, C. (2005). *Teaching Reading Skill in a Foreign Language*. London: Heinemann Educational Books.
- Olmos, C. (2009). An Assessment of the Vocabulary Knowledge of Students in the Final Years of Secondary Education: Is Their Vocabulary Extensive Enough? *International Journal of English Studies* , 73-90.
- Paribakht, T.S., & Wesche, M. (1996). Enhancing Vocabulary Acquisition through reading: a Hierarchy of Text-Related Exercise types. *Canadian Modern Language Review*, 52, 155-178. Retrieved from www.carla.umn.edu/immersion/acie/vol11/Bridge1.1.pdf
- Rashidi, N., & Khosravi, N. (2010) Assessing the Role of Depth and Breadth of Vocabulary Knowledge in Reading Comprehension of Iranian EFL Learners. *Journal of Pan-Pacific Association of*

- Applied Linguistics*, 1(14), 81-108. Retrieved from files.eric.ed.gov/fulltext/EJ920505.pdf
- S, Ditha Agustin. (2009). *Correlation between Vocabulary Size and Reading Comprehension in English Learnign*.Tangerang. Retrieved from repository.uinjkt.ac.id/dspace/.../DITHA%20AGUSTIN%20S.-FITK.pdf
- Snow, C. Reading for Understanding toward an R&D Program in Reading Comprehension. Santa Monica, RAND (2002)
- The Barrett Taxonomy of Cognitive and Affective Dimensions of Reading Comprehension. Retrieved from www.aiz.vic.edu.au/Embed/Media/.../Art-read-comp-taxonomy-barrett
- Yildirim, K. Y. (2011). Is Vocabulary a Strong Variable Predicting Reading Comprehension and Does the Prediction Degree of Vocabulary Vary according to Text Types. *Eduction Sciences Theory and Practice* , 11(3), 1547-1545.
- Zhen, S. (2008). The Role of Breadth and Depth of Vocabulary Knowledge in EFL Reading Performance. *Asian Social Science*, 4(12), 135-137. Retrieved from www.ccsenet.org/journal/index.php/ass/article/download/773/747